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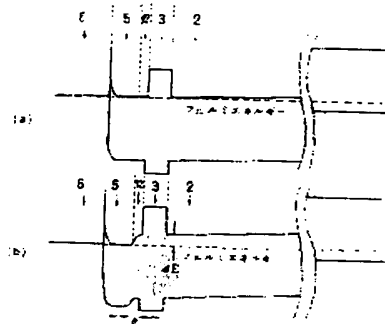
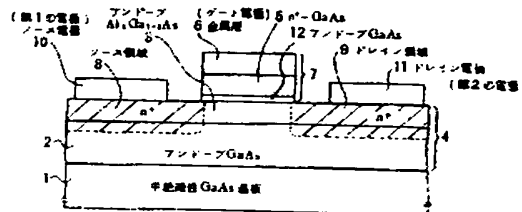
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APPLICANT : NIPPON TELEGR & TELEPH CORP
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TITLE : FIELD EFFECT TRANSISTOR



ABSTRACT : PURPOSE: To realize a small positive threshold value with good reproducibility and uniformity by a method wherein an undoped semiconductor layer and an N⁺ type semiconductor layer are formed on a semiconductor with a small electron affinity.

CONSTITUTION: An undoped GaAs layer 12 (thickness 3~30nm) is provided between an undoped Al_xGa_{1-x}As layer 3 and an N⁺ type GaAs layer 5. As electrons leak out of the N⁺ type GaAs layer 5 into the undoped GaAs layer 12 by thermal energy, the undoped GaAs layer 12 is charged negative. By this negative charge, a potential gradient is created in the undoped GaAs layer 12 along the direction of pushing back electrons from the undoped GaAs layer 12 to the N⁺ type GaAs layer 5 and an edge of the conduction band of an undoped GaAs layer 2 is lifted in Fermi energy by energy ΔE . Therefore, a threshold V_{TH} takes a positive value ΔE .

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